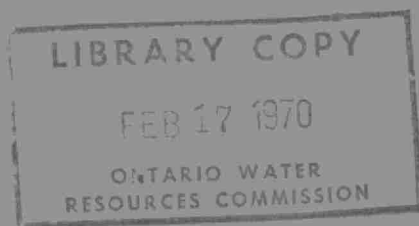




THE  
ONTARIO WATER RESOURCES  
COMMISSION

DEVELOPMENT AND WATER POLLUTION CONTROL

TOWNSHIP OF KING



1970

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TOWNSHIP OF KING

DEVELOPMENT

AND

WATER POLLUTION CONTROL

January 1970

District Engineers Branch  
Division of Sanitary Engineering

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TOWNSHIP OF KING

DEVELOPMENT AND WATER POLLUTION CONTROL

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# R E P O R T

## TOWNSHIP OF KING

### DEVELOPMENT AND WATER POLLUTION CONTROL

#### INTRODUCTION

Between 1951 and 1966 the population of King Township has very nearly doubled to 14,226. This growth rate representing 4.4 percent annually has been sustained by urban growth in the Police Villages of King City, Nobleton, and Schomberg, and the community of Oak Ridges. Estate type development on large lots having individual water and sewage disposal facilities has also contributed to the increase.

Development in the Police Villages has taken place on the basis of municipal water and individual septic tank and tile bed systems. It is alleged from various sources that the sewage disposal systems in these communities are malfunctioning causing the discharge of inadequately treated waste to the drainage ditches, thus creating a water pollution problem. The purpose of this survey was to determine to what degree this problem existed and recommend on the most feasible method of correcting the problem.

## DEVELOPMENT IN KING TOWNSHIP

### Municipal Policy

The existing official plan approved by the Minister of Municipal Affairs in 1955 advocated that development take place on acreage lots or acreage parcels having larger than average dwelling units. This development was to occur on the fringes of King City, Nobleton, Schomberg and Kettleby as well as in rural areas where suitable.

Subsequently the plan was implemented by means of four restricted area bylaws, covering these areas and Oak Ridges. The restricted area bylaws permitted minimum lot sizes of 9-10,000 square feet and minimum frontages of 75-80 feet where the development was to take place on municipal water and private septic tank and tile-field systems. The original official plan, however, had not set out specifically requirements for water supply and pollution control and therefore, the restricted area bylaws and subdivision control procedures subsequently permitted quite a wide range of lot sizes and servicing arrangements.

Amendment number one to the official plan approved in 1968 attempted to clarify the development policy by specifying that development be on one-half acre lots using municipal water and septic tank and tile-field systems.

The township is now in the process of creating a new official plan which is to be an interim one effective to 1975. This plan should serve to prevent further aggravation



of development problems.

#### Subdivision Development

Since 1964, thirteen developments in the Nobleton, King City, and Oak Ridges areas have been given final approval by the Department of Municipal Affairs. A total of 304 lots were developed. Studies by the Department of Municipal Affairs have shown that a large supply of lots not yet built upon exist in the township.

#### WATERSHED DRAINAGE

Both the East Branch of the Humber River and the Schomberg Branch of the Holland River have their headwaters in King Township. Extremely low flows in the headwater areas occur during much of the year. In many cases small tributaries such as those flowing through Nobleton are dry during the summer months.

Flow measurements taken by the Department of Energy, Mines and Resources from the East Humber at Humber Trails show minimum flows averaging between two and three cubic feet per second (CFS) during the months of August and September 1968. In the Schomberg Branch of the Holland River near Schomberg minimum flows ranged from 0.60-2.9 CFS for the entire year.

Due to the low flows, these watercourses are incapable of assimilating a continuous waste discharge even from sewage treatment plants having a very sophisticated type and degree of treatment. In addition, large scale

urbanization changes the runoff characteristics of storm water, transporting heavier volumes of debris-laden water to the streams, promoting scouring and abrasion, and thereby adding to the aesthetic deterioration. Considering the on-stream recreational use of the Humber River by the MTRCA, the discharge of upstream sewage treatment plants would not be sound from a public health point of view. For these reasons, the OWRC and the Metropolitan Toronto Region Conservation Authority have consistently opposed the establishment of sewage treatment facilities on the headwaters of the Humber.

#### FIELD SURVEY

The field survey consisted of observing the storm drainage systems serving Nobleton, King City and Oak Ridges, and the collection of samples from these drainage systems, the local tributaries and the Humber River. In addition, discussions were held with local municipal and health officials.

The technical interpretation and significance of the analyses are shown in appendix one. It should be noted that the sample results cannot be interpreted strictly on the basis of being satisfactory or unsatisfactory from the point of view of the OWRC objectives since there are other factors which must be taken into consideration. Essentially, the drainage in the ditches is very poor and in most

instances samples from the ditches were of stagnant water. It is not uncommon to obtain a high BOD value or coliform count in such a sample.

The survey indicated that the major source of contamination to the ditches was not directly from septic tanks but the discharge of laundry wastes either directly or through sump pump outlets. During heavy rainfall, storm runoff would carry this waste to the tributaries and thence to the Humber River. It should be noted, however, that although such wastes cause malodorous and unsightly conditions they are of less public health significance than a direct discharge from a septic tank system.

#### POLICE VILLAGE OF NOBLETON

##### General

The population of Nobleton is slightly in excess of 1,200. The municipal water supply is from drilled wells. It is hard and fairly high in iron. The bacteriological quality has been satisfactory. Sewage disposal is accomplished by means of septic tank and subsurface non-effluent producing tile beds.

Drainage of the area is provided by open ditches with a short run of storm sewers along Highway 27. The ditches lead to three small tributaries of the East Humber River. These tributaries are designated on the appended map as the west tributary (HETW) the middle tributary (HETM) and the east tributary (HETE).

### Sample Results and Observations

The results of the samples collected from the ditches in Nobleton are listed in Table 1A. High coliform counts, suspended solids, and in some cases BOD values can be noted throughout. As can be seen from the remarks these are generally associated with conditions of stagnant water or minimal flow.

Two direct discharges of septic tank waste to ditches were noted, one on Cross Avenue and the other on Lynwood Crescent; both of these ditches discharge to the middle tributary.

Table one shows the results of the samples collected from the tributaries and the Humber River. High coliform counts are indicated in the tributary samples; however, the results from the Humber River are within OWRC objectives.

### Municipal Survey

The Nobleton Police Village Trustees generally feel that municipal sewerage facilities are required to correct the disposal problems in the village. They feel that due to the high cost of such works, the installation of these facilities can be accomplished only by permitting further residential, commercial, and industrial development in a properly planned manner and having the cost of providing sewers in the main part of the village borne by the developers.

In order to obtain the opinion of the residents of Nobleton, a questionnaire was prepared and circulated by the trustees which asked opinions concerning the functioning of private sewage disposal systems, and whether or not the citizens were in favour of the installation of sanitary sewers. The offer by the developers to install sewers and the support in principle of the trustees was expressed. There was no specific mention of the cost to the home owners of providing sewers to correct the problems in the existing village without the aid of the developers.

Approximately 200 questionnaires were returned and 87 percent favoured the installation of sanitary sewers. Many felt that unsanitary conditions existed in the ditches adjacent to their premises and various opinions were given as to the cause of these conditions. Some stated that septic tanks had discharged to the ditches and mentioned poor installation as a cause. The most frequently-mentioned problem was the discharge of laundry wastes to ditches directly or by way of sump pumps and the resulting stagnation and odour in the ditches due to the poor drainage. The inadequate drainage is generally due to the poor grading of ditches and lots, and many indicated that during the spring tile-bed areas were flooded forcing the sewage to back up to the sump systems.

## POLICE VILLAGE OF KING CITY

### General

The population of King City is approximately 2,000. The community is served by a municipal water supply; two deep drilled wells are in operation at the present time and water is pumped untreated to the distribution system. The water is slightly high in iron but otherwise satisfactory. The bacteriological quality is satisfactory. The disposal of sewage is by individual septic tanks and subsurface non-effluent producing tile beds.

Drainage is provided by open ditches and the newly constructed storm sewers along Keele Street south of the King Side Road. Storm sewers have also been constructed in the new subdivision at the north-west village limits. The ditches and storm sewers drain to two main tributaries leading to the Humber River. These are noted on the appended map as HEKWT and HEKET.

### Sample Results and Observations

The results of the ditch samples collected at King City are noted in Table 2A. High BOD values, solids contents and coliform counts can be noted in these samples collected from three separate points indicated on the appended map. Once again these are associated with stagnant laundry wastes. The results of the samples from the storm sewers are influenced by the construction activity associated with the provision of these facilities.

The ditches in King City were for the most part dry during the sampling periods. There was considerably less evidence of stagnant water in the ditches here than in Nobleton, the exception being three laundry waste discharges as noted in Table 2A. The Police Village Officials generally feel that a major pollution problem does not exist in King City, and the observations made during this survey tend to substantiate this conclusion.

#### COMMUNITY OF OAK RIDGES

##### General

The community of Oak Ridges is divided by Yonge Street and lies partly in the Township of Whitchurch and partly in the Township of King. Two drilled wells located in King Township supply water to the community through a municipal system. The treatment facilities of this system are presently being upgraded. Sewage disposal is by means of individual septic tanks and subsurface non-effluent tile bed systems.

The area is drained by open ditches which discharge to the East Branch of the Humber River. These are designated on the appended map as DOR.

##### Sample Results and Observations

During the sampling periods all the drainage ditches in the westerly section of the community were dry with the exception of three which are noted in Table 3A. These samples displayed generally high BOD values, solids contents and coliform counts and are associated with the stagnation of sump pump wastes.

Table 3 lists the results of samples collected from the East Humber River in this area. Generally satisfactory results are indicated; however, drainage is poor throughout the area. A considerable amount of debris is prevalent throughout and there are points where considerable erosion is occurring. Because of the minimum flow, weeds and algae are abundant. The aesthetic quality of the water in this area could be considerably improved if the streams were cleaned out and the erosion eliminated.

Satisfactory results were obtained in the samples collected from the East Humber River downstream from Oak Ridges where it crosses Bathurst Street with the exception of one high coliform count obtained on November 3. There is a farm yard immediately upstream from this sampling point.

#### RECOMMENDED ACTION

##### Ditch Pollution

In order to avoid the discharge of sewage treatment plant effluent from Nobleton to the headwaters of the Humber River, correction of the waste problem should be carried out on an individual basis. It would appear that if the storm drainage of the area could be improved to the point where the flooding of tile beds was eliminated, and at the same time laundry wastes were no longer discharged to the ditches, the problem of malodorous septic wastes ponding in these ditches would be to a large extent eliminated. This would involve considerable effort and some expense on the part of



individuals to redirect laundry wastes to existing septic tank systems since in some cases the system will have to be enlarged. At the same time, the municipality should make improvements to the storm drainage in the area. A consulting engineer should be retained to prepare a report on improved drainage. Once the storm drainage is improved, a noticeable improvement of the function of the tile bed systems should occur. The success of this programme will depend on the co-operation achieved between the municipal officials and the citizens of the area.

In King City the problem is somewhat less acute due to better drainage conditions and laundry waste discharges being considerably less prevalent. However, the same type of action would be required to eliminate the wastes from the ditches in the King City area.

The few problems in the community of Oak Ridges could be solved similarly on an individual basis in conjunction with improved storm drainage.

#### Development Policy

Development policy should preclude any further development on small-size residential urban lots. New subdivision development should not take place on 10,000 square foot lots on municipal water as in the past. The availability of municipal water eliminates individual well contamination problems; however, it should not influence lot sizes since the problems invariably arise from storm and sanitary disposal

facilities. It should be the responsibility of the developer to provide in all development proposals adequate field investigation undertaken by qualified personnel to ensure that favourable conditions exist in relation to, the soil type and its permeability, the depth of the soil permanently above the water table, the adequacy of drainage facilities according to the proposed finished lot grades, the size of the lot with respect to the ability to solve problems of malfunction privately and the proposed size of the dwelling unit. Rather than designate a particular lot size, each development should be considered according to its own merits on the basis of the detailed information as mentioned above and where it can be shown that optimum conditions of soil, water table, and drainage exist or will be created by the developer, then such a development should be allowed to proceed.

The major portion of development during the five year interim official plan will probably occur as estate type. This type of development has recently been clarified by the Deputy Minister of Municipal Affairs as consisting of lots at least two acres in size at a density of not more than two people per net acre. A property of this size should be capable of maintaining a properly functioning private well and septic tank system. Should either of these facilities fail the problem could likely be corrected on the property thus ruling out the possible future need for communal water or sewer systems.

It is expected that all estate type development will take place through a registered plan of subdivision in the areas which conform with the standards and designation set out in the Official Plan. It is expected that the actual areas will be set out by the Official Plan or by amendment according to specified standards.

#### SUMMARY

This survey has revealed that the Police Villages of Nobleton and King City and the community of Oak Ridges are not causing a major pollution problem to the East Humber River. The problem is rather the discharge of sump pump drainage including laundry waste to inadequately drained ditches which results in the existence of malodorous and unsightly conditions in these drainage courses. The inadequate storm drainage systems also contribute to the flooding of tile bed areas during heavy runoff periods thereby causing a back up of sewage to the septic tank systems in some cases.

Samples collected from the ditches have revealed high BOD values, solids contents and coliform counts. However, a realistic interpretation of these results based on the observations made indicate this contamination to be of less public health significance than the discharge of effluent from septic tank systems. The Humber River sample results indicate they are not contributing major pollution to the East Humber River.

It is felt that the wash-water wastes should be eliminated on an individual basis and at the same time storm drainage improvements should be carried out on a municipal basis.

The existing problems have occurred largely as a result of the development policy which has prevailed. All new development should be assessed on the basis of whether or not the proposal is reasonable from the point of view of preventing servicing problems in the future rather than attempting to designate a standard lot size as criteria for development.

#### RECOMMENDATIONS


A consulting engineer should be retained to investigate storm drainage in the Police Village of Nobleton, the Police Village of King City, and the community of Oak Ridges.

An intensive campaign to have residents eliminate the discharge of laundry wastes from their premises to the ditches should be initiated by local officials.

All subdivision proposals should provide detailed information concerning water supply, storm drainage and sewage disposal as discussed in the report.

/elc

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## APPENDIX A

### SIGNIFICANCE OF LABORATORY ANALYSES

#### Bacteriological Examination

The membrane filter technique is employed to obtain a direct enumeration of coliform organisms and is reported per 100 millilitres. The presence of coliforms indicates pollution from human or animal excrement, or from some non-fecal forms. A membrane filter coliform count in excess of the desirable upper limit of 2,400 organisms is considered to render waters undesirable for bathing purposes.

The M.P.N. Index reported by Regional Health Laboratories on drinking water supplies as the "Most Probable Number" (M.P.N.) per 100 millilitres of sample is employed to determine the count of coliform bacteria present in water supplies.

#### Chemical Analyses

##### Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand is reported in parts per million (ppm), and is an indication of the amount of oxygen required for the stabilization of decomposable organic matter in the water. The completion of the laboratory test requires five days, under the controlled incubation temperature of 20<sup>o</sup> Centigrade.

The Commission objective for surface-water quality is an upper limit of four (4) ppm.

### Solids

The value for total solids, expressed in parts per million (ppm), is the sum of the values for the suspended and the dissolved matter in the water. The concentration of suspended solids is generally the most significant of the solids analyses in regard to surface-water quality.

Oils and Ether Soluble Materials - These include oils and all other ether soluble materials such as tarry substances and greases. The presence of these pollutants renders water difficult and sometimes impractical to treat, either for industrial or domestic use. Oils make streams unsightly and water unfit for bathing.

TABLE I

TOWNSHIP OF KING  
POLICE VILLAGE OF NOBLETON  
RESULTS OF RIVER SAMPLES

<u>SAMPLING POINT</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>SOLIDS TOTAL (PPM)</u>	<u>SUSP. (PPM)</u>	<u>FAECAL COLIFORMS PER 100 ML</u>	<u>TOTAL COLIFORMS PER 100 ML</u>	<u>REMARKS</u>
HE 28.6	EAST HUMBER RIVER AT KING-VAUGHAN TWP. LINE.	SEPT. 5	1.2	350	10		600	
		OCT. 16	1.4	320	5	262	288	
HETE 31.5	EASTERLY TRIBUTARY UPSTREAM FROM KING SIDE ROAD.	APRIL 29	1.6	340	35		130	
HETE 31.3	EASTERLY TRIBUTARY AT KING SIDE ROAD.	APRIL 29	2.5	400	35		8,200	TURBID WITH GOOD FLOW.
		JULY 2	3.0	650	20		3,000	
		SEPT. 5	4.5	930	50		9,000	WATER STAGNANT.
		OCT. 16	4.0	670	70	4,400	94,000	HEAVY RAIN CARRYING RUNOFF FROM NEW SUBDV.
HETM 33.0	MIDDLE TRIBUTARY UP- STREAM FROM KING SIDE ROAD.	APRIL 29	1.4	270	10		490	
HETM 32.4	MIDDLE TRIBUTARY AT KING SIDE ROAD.	APRIL 29	2.5	370	15		5,400	DEBRIS IN THE WATER DURING ALL SAMPLE RUNS.
		MAY 14	2.5	260	6		2,400	
		JULY 2	3.3	730	10		16,900	
		SEPT. 5	4.5	840	15		2,600	WATER STAGNANT.
		OCT. 16	13	625	150	280,000	700,000	FLOWING.
		NOV. 3	1.6	820	10	1,500	6,500	SEPTIC TANK EFFLUENT ENTERING TRIBUTARY.
HETW 33.7	WESTERLY TRIBUTARY UPSTREAM FROM NOBLETON.	APRIL 29	1.0	280	5		2,400	



TABLE 1 CONTD

<u>SAMPLING POINT</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>5-DAY BOD (PPM)</u>	<u>SOLIDS TOTAL (PPM)</u>	<u>SUSP. (PPM)</u>	<u>FAECAL COLIFORMS PER 100 ML</u>	<u>TOTAL COLIFORMS PER 100 ML</u>	<u>REMARKS</u>
HETW33.0	WESTERLY TRIBUTARY AT HIGHWAY 27.	APRIL 29	3.0	430	60		2,100	TURBID.
		MAY 14	4.0	440	3		8,900	SEPTIC WASTES APPEAR TO BE PONDING IN FRONT OF THE FIRST HOUSE ON THE WEST SIDE OF THE STREET.
		SEPT. 5						NO FLOW.
		OCT. 6						NO FLOW.
		OCT. 16	22	1,200	280	35,000	16,000,000	MINIMAL FLOW WITH SCUM ON SURFACE.
		NOV. 3	2.0	730	10	7,100	15,000	GOOD FLOW WITH NO SCUM.

TABLE 1A

TOWNSHIP OF KING  
POLICE VILLAGE OF NOBLETON  
RESULTS OF DITCH SAMPLES

SAMPLING POINT	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS TOTAL (PPM)	SUSP. (PPM)	FAECAL COLIFORMS PER 100 ML	TOTAL COLIFORMS PER 100 ML	REMARKS
DN-1	KING SIDE ROAD AND ENTRANCE TO NEW SUBDIVISION.	SEPT. 5					9,000	MINIMAL FLOW.
DN-2	SOUTH-EAST DITCH AT JUNCTION OF FIRST TWO ROADS IN NEW SUBDIVISION.	SEPT. 5 OCT. 6 OCT. 16 NOV. 3	5.0 6.0	490 850	80 10	3,400 2,000	800,000 80,000	NO FLOW. NO FLOW. TURBID FROM RUNOFF. GOOD FLOW.
DN-3	DITCH LEADING TO EAST TRIBUTARY BESIDE LOT 42 OF THE NEW SUBDIVISION.	SEPT. 5 OCT. 6 OCT. 16 NOV. 3	4.5 1.8	625 770	80 10	900 3,700	92,000 170,000	NO FLOW. NO FLOW. TURBID.
DN-4	DITCH EAST CENTRAL PART OF NEW SUBDIVISION.	SEPT. 5 OCT. 6 OCT. 16	5.0	730	10	1,220	600,000 180,000	SUMP PUMP EFFLUENT. NO FLOW.
DN-5	DITCH IN FRONT OF 19 CROSS DRIVE.	APRIL 29 SEPT. 5 OCT. 16	14 1,000 460	830 3,030 4,100	100 160 130		500,000 2,400,000,000 13,300,000	SEPTIC TANK PROBLEM. SEPTIC TANK PROBLEM. TILE BED HAS BEEN REPLACED.
DN-6	DITCH DISCHARGING TO MIDDLE TRIBUTARY FROM ELIZABETH DRIVE.	APRIL 29 MAY 14 SEPT. 5 OCT. 16	4.0 1.4	590 710	15 4		21,000 2,500	FLOW ABOUT 5 GPM. MINIMAL FLOW. NO FLOW. NO FLOW.
DN-7	SOUTHERLY DITCH DIS- CHARGING TO MIDDLE TRIBUTARY FROM LYNWOOD CRESCENT.	MAY 14 JULY 7 SEPT. 5 OCT. 16	6.0 3.2 15	1,000 690 880	3 50 40		150,000 100,000 480,000	FLOW 15 TO 20 GPM. MINIMAL FLOW. NO FLOW. HEAVY FLOW.

TABLE 1A (CONTD)

SAMPLING POINT	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS		FAECAL COLIFORMS PER 100 ML	TOTAL COLIFORMS PER 100 ML	REMARKS
				TOTAL (PPM)	SUSP. (PPM)			
DN-8	NORTHERLY DITCH DIS- CHARGING TO MIDDLE TRIBUTARY FROM LYNWOOD CRESCENT.	MAY 14	5.0	1,700	25		22,000	FLOW 15 TO 20 GPM.
		SEPT. 5						NO FLOW.
		OCT. 16						NO FLOW.
DN-9	DITCH NORTH-WEST CORNER OF HAWMAN AND CHINOOK AVENUES.	SEPT. 5	10	1,600	890	5,000 1,050 240	1,600,000	WATER STAGNANT.
		OCT. 6					12,000	WATER STAGNANT.
		OCT. 16	6.0	1,710	50		181,000	MINIMAL FLOW.
		Nov. 3	1.2	680	25		100,000	FLOWING.
DN-10	DITCH NORTH SIDE OF HAWMAN AVENUE.	MAY 14	80	2,010	1,420		10,900	SCUM ALONG DITCH.
		SEPT. 5						NO FLOW.
		OCT. 16						NO FLOW.
DN-11	DITCH IN FRONT OF 5 HAWMAN AVENUE.	OCT. 6				6,000	22,000,000	SUMP PUMP EFFLUENT.
		OCT. 16						NO FLOW.
DN-12	DITCH IN FRONT OF 28 HAWMAN.	SEPT. 5	20	910	15		220,000	NO FLOW.
		OCT. 16						REPORTED SUMP PUMP WASTES.
DN-13	DITCH WEST SIDE OF HWY. 27 NORTH OF WEST TRIBUTARY.	JULY 2	360	1,040	70		70,000,000	FLOW APPROXIMATELY 1 GPM.
		SEPT. 5						NO FLOW.

TABLE 2

TOWNSHIP OF KING  
POLICE VILLAGE OF KING CITY  
RESULTS OF RIVER SAMPLES

SAMPLING POINT	DESCRIPTION	DATE	5-DAY	SOLIDS		FAECAL	TOTAL	REMARKS
			BOD (PPM)	TOTAL (PPM)	SUSP. (PPM)	COLIFORMS PER 100 ML	COLIFORMS PER 100 ML	
HE - 38.8	EAST HUMBER RIVER AT KEELE STREET NORTH OF KING CITY.	SEPT. 5	1.6	330	10		900	
		OCT. 16	3.0	240	10	20	160	
HE - 37.0	EAST HUMBER RIVER AT KINGHORN.	SEPT. 5	2.5	330	10		150	
		OCT. 6	0.8	450	70	400	1,400	
		OCT. 16	3.0	420	5	188	1,700	
		NOV. 3	2.5	460	20	150	2,900	TURBID.
HET-38.8	TRIBUTARY WEST OF KEELE STREET AT KING SIDE ROAD.	SEPT. 5	2.5	1,010	20		13,900	STAGNANT WITH TRACES OF OIL AND DEBRIS.
		OCT. 16	9.0	810	85	3,000	250,000	STAGNANT.
		NOV. 3	1.2	760	40	140	2,400	FLOWING.

TABLE 2A

TOWNSHIP OF KING  
POLICE VILLAGE OF KING CITY  
RESULTS OF DITCH AND STORM SEWER OUTFALL SAMPLES

SAMPLING POINT	DESCRIPTION	DATE	5-DAY	SOLIDS		FAECAL COLIFORMS PER 100 ML	TOTAL	REMARKS
			BOD (PPM)	TOTAL (PPM)	SUSP. (PPM)		COLIFORMS PER 100 ML	
DK-1	DITCH IN FRONT OF 24 FORDE CRESCENT.	SEPT. 5						No FLOW.
		OCT. 6	420	3,080	80	4	2,100	LAUNDRY WASTES.
		OCT. 16	140	1,800	400	100	66,000,000	SUMP PUMP DISCHARGE.
DK-2	DITCH ACROSS FROM 158 KINGSLYNN DRIVE,	SEPT. 5	14.0	410	20		580,000	SUMP PUMP DISCHARGE.
		OCT. 6						No FLOW.
		OCT. 16						No FLOW.
DK-3	DITCH IN FRONT OF 145 PATRICIA AVENUE.	SEPT. 5						No FLOW.
		OCT. 6	85	1,140	150	35,000	1,800,000	SUMP PUMP DISCHARGE CONTAINING LAUNDRY WASTE.
		OCT. 16	4.0	170	5	96	20,000	
HEKWT-39.4 W	STORM SEWER OUTFALL AT KEELE AND STATION ROAD.	SEPT. 5	36.0	950	100		128,000	DEBRIS FROM CONSTRUCTION BEING WASHED INTO STORM SEWERS.
		OCT. 6	6.0	730	25	12	2,100	OIL BEING WASHED OFF ROADS.
		OCT. 16	17	500	35	100	280,000	RAIN WASHING DEBRIS OFF ROAD TO STORM SEWER.
		Nov. 3	7.0	840	10	2,000	140,000	
HE-38.4W	STORM SEWER OUTFALL FROM NEW SUBDIVISION.	OCT. 6	2.0	450	40	220	140,000	MINIMAL FLOW.
		OCT. 16	12	390	25	320	5,400	MINIMAL FLOW WITH SAND FROM CONSTRUCTION BEING WASHED TO STORM SEWERS.

TABLE 3

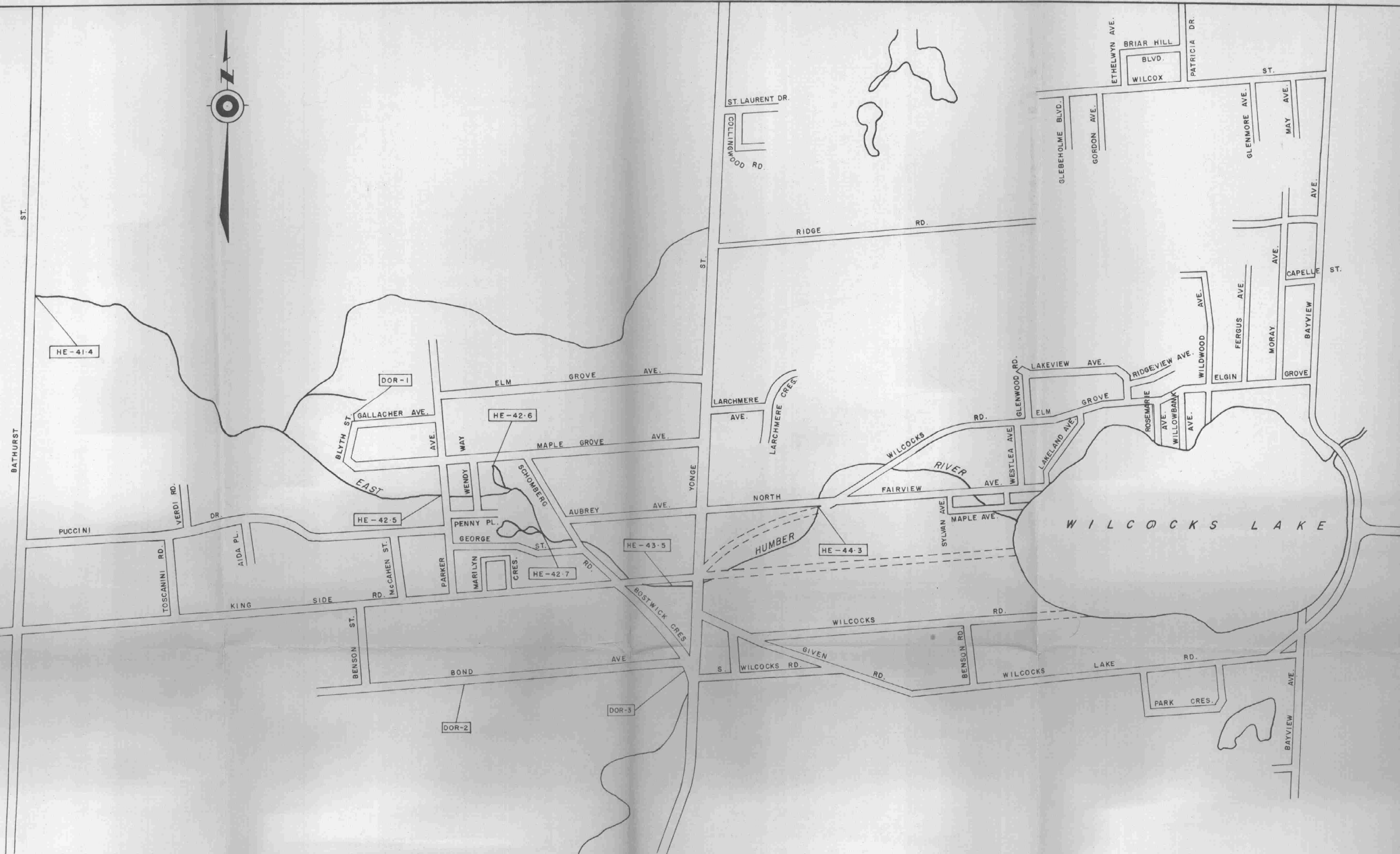
TOWNSHIP OF KING  
COMMUNITY OF OAK RIDGES  
RESULTS OF RIVER SAMPLES

SAMPLING POINT	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS TOTAL (PPM)	SUSP. (PPM)	FAECAL COLIFORMS PER 100 ML	TOTAL COLIFORMS PER 100 ML	REMARKS
HE-44.3	EAST HUMBER RIVER AT THE NORTH LAKE WILCOX ROAD.	SEPT. 7	2.5	190	5		8	SURFACE COVERED WITH DUCKWEED AND THE FLOW WAS MINIMAL. EROSION AROUND THE CULVERT UNDER THE ROAD IMPEDES THE FLOW.
		OCT. 6	6.0	390	160	4	20	WATER PONDING RATHER THAN FLOWING AS EROSION IS PREVENTING LOW FLOWS.
		OCT. 16	13	250	5	8	300	MINIMAL FLOW.
HE-43.5	EAST HUMBER RIVER AT THE SOUTH-WEST CORNER OF HWY. 11 AND KING SIDE ROAD.	SEPT. 7	3.0	650	10		690	DEBRIS ALONG WATERCOURSE.
		OCT. 16	7.0	510	85	700	1,900	TURBID FROM RUNOFF.
HE-42.7	POND AT SCHOMBERG AVENUE.	OCT. 6	2.5	560	10	156	180	DUCKWEED ALONG SHORE OF POND.
HE-42.6	POND AT MAPLE GROVE AVENUE.	SEPT. 7	1.8	460	5		30	DUCKWEED ALONG SHORE OF POND.
		OCT. 16	2.5	540	5	16	210	
HE-42.5	EAST HUMBER RIVER AT PARKER DRIVE.	SEPT. 7	6.0	670	40		6,000	SLOW FLOW, SURFACE COVERED WITH DUCKWEED.
		OCT. 16	3.0	500	5	88	1,800	
HE-41.4	EAST HUMBER RIVER AT BATHURST STREET.	OCT. 6	0.4	450	5	196	260	
		OCT. 16	0.8	360	5	1,200	2,300	
		NOV. 3	2.5	600	10	330	8,200	RUNOFF FROM FARM ENTERING RIVER.

TABLE 3A

TOWNSHIP OF KING  
COMMUNITY OF OAK RIDGES  
RESULTS OF DITCH SAMPLES

SAMPLING POINT	DESCRIPTION	DATE	5-DAY	SOLIDS		FAECAL	TOTAL	REMARKS
			BOD (PPM)	TOTAL (PPM)	SUSP. (PPM)	COLIFORMS PER 100 ML	COLIFORMS PER 100 ML	
DOR-1	DITCH AT THE CORNER	SEPT. 7	2.0	530	20		36,000	SUMP PUMP DISCHARGE.
	OF BLYTH AND	OCT. 16	1.6	730	10	2,700	7,900	
	GALLACHER AVENUE.	NOV. 3	4.0	630	25	1,500	1,300,000	
DOR-2	DITCH ACROSS FROM	OCT. 6						NO FLOW.
	120 BOND AVENUE.	OCT. 16	44	630	180	7,300	19,200,000	SUMP PUMP DISCHARGE, WATER IS STAGNANT AND AND HAS AN ODOUR.
		NOV. 3						STAGNANT WATER STILL IN THE DITCH.
DOR-3	SOUTH-WEST CORNER OF HWY. 11 AND BOND AVENUE.	OCT. 6						NO FLOW.
		OCT. 16	10	530	200	1,100	40,000	



TOWNSHIP

OF

KING

TOWNSHIP

OF

WHITCHURCH

**LEGEND**

HE-42.5 - STREAM SAMPLING POINT SHOWING MILEAGE

DOR-1 - OAK RIDGES OPEN DITCH AND SAMPLING POINT NUMBER

ONTARIO WATER RESOURCES COMMISSION

COMMUNITY OF OAK RIDGES

TOWNSHIPS OF KING AND WHITCHURCH

WATER POLLUTION SURVEY

1969

SCALE: 1" = 800' Approximately

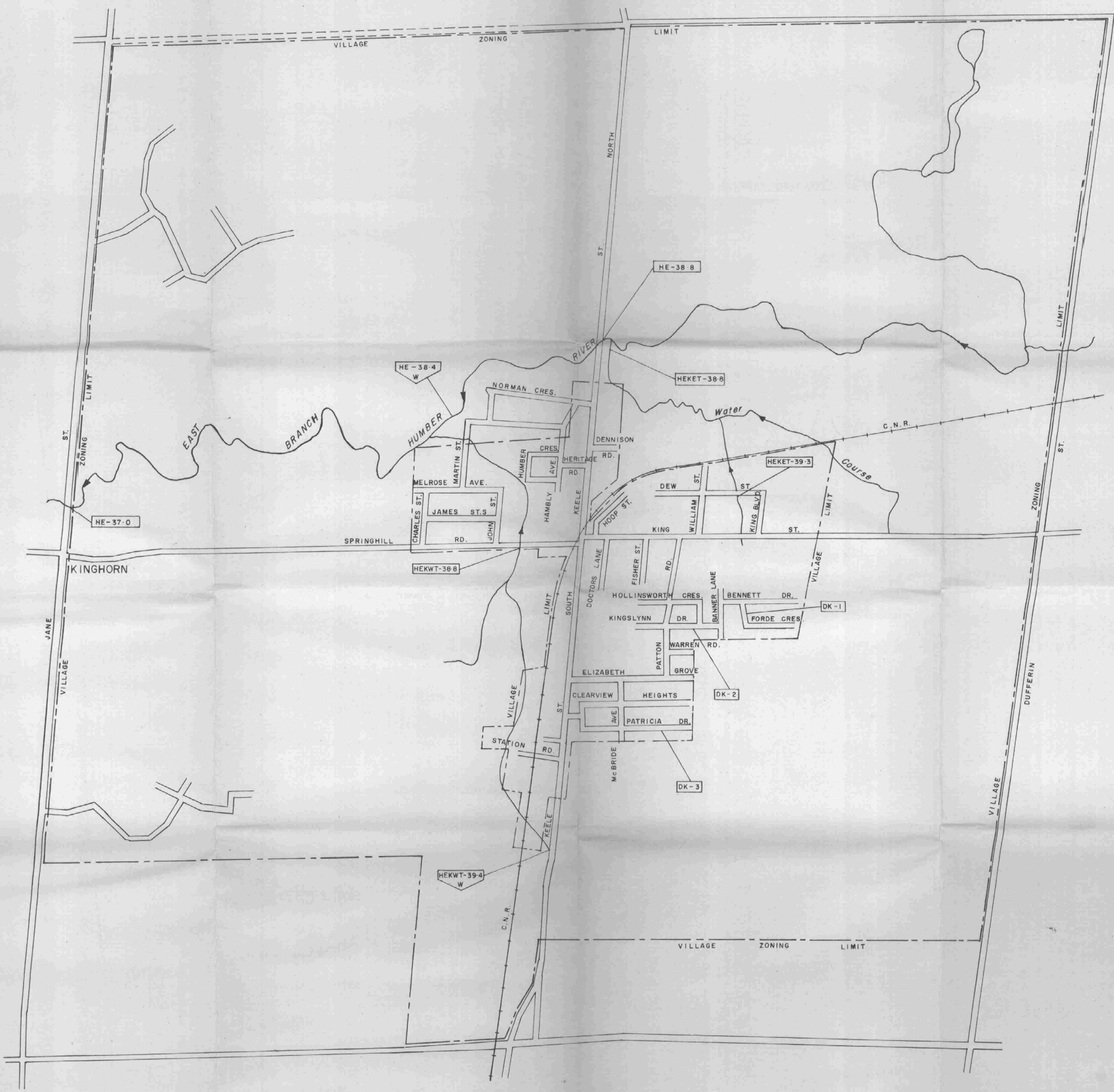
DRAWN BY: L. L. BROOME

DATE: NOVEMBER, 1969

CHECKED BY: J. O.

DRAWING No: 69-211-DE

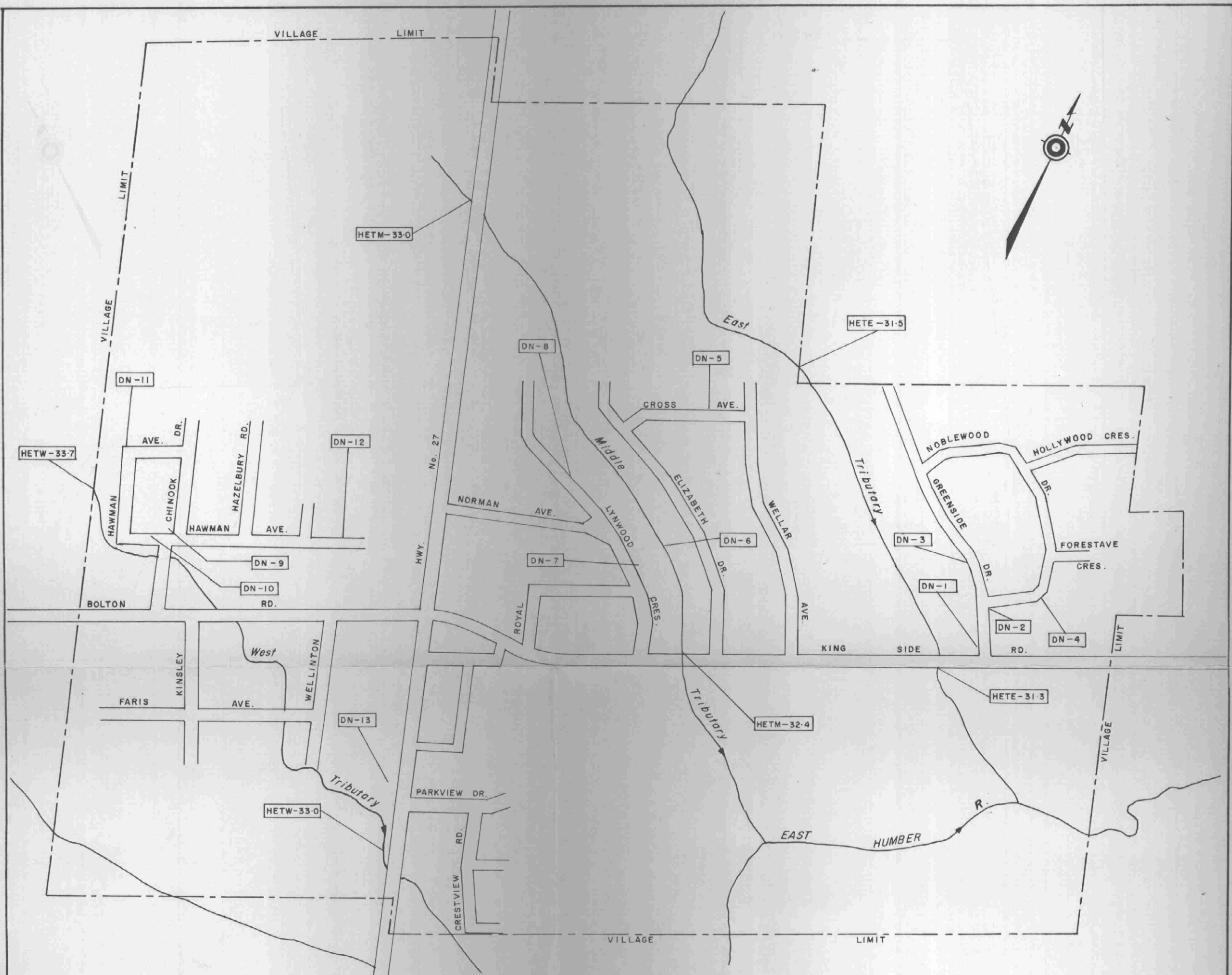




**LEGEND**

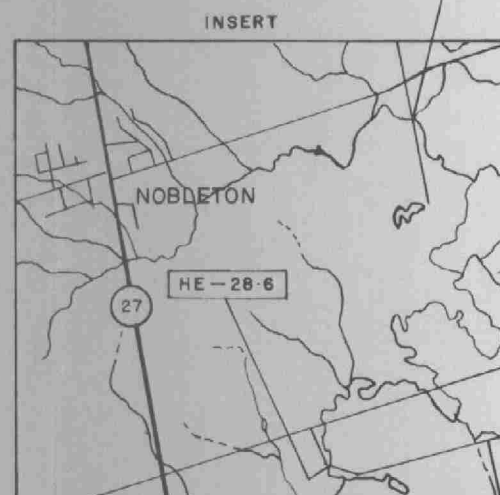
- HE-37-0 - STREAM SAMPLING POINT SHOWING MILEAGE
- DK-2 - KING CITY OPEN DITCH AND SAMPLING POINT NUMBER
- HE-38-4 - OUTFALL SHOWING STREAM AND MILEAGE
- W - TYPE OF OUTFALL
- W - STORM SEWER

ONTARIO WATER RESOURCES COMMISSION	
POLICE VILLAGE OF KING CITY	
TOWNSHIP OF KING	
WATER POLLUTION SURVEY	
1969	
SCALE: 1" = 1,000 FEET Approximately	
DRAWN BY: L.L. BROOME	DATE: NOVEMBER, 1969
CHECKED BY: J.O.	DRAWING No: 69-109-DE



# LEGEND

- HETW-33-0 — STREAM SAMPLING POINT SHOWING MILEAGE  
DN-13 — NOBLETON OPEN DITCH AND SAMPLE POINT NUMBER



ONTARIO WATER RESOURCES COMMISSION  
POLICE VILLAGE OF NOBLETON  
TOWNSHIP OF KING  
WATER POLLUTION SURVEY  
1969

SCALE : 1" = 500' Approx.

DRAWN BY : L.L.BROOME

DATE : NOVEMBER, 1969

CHECKED BY : J.O.

DRAWING No: 69-212-DE



Date Due

[illegible]

+ 3 maps

King

Laboratory Library  
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Etobicoke, Ontario M9P 3V6  
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